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Bones need help to stay strong, healthy

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BONES NEED HELP TO STAY STRONG, HEALTHY

By Terry Brenner
University Relations

It's easy to take bones for granted. After all, that human skeleton lurking unchanged year after year in the corner of the anatomy classroom looks pretty solid.

But, of course, bones break. And as people age, their bones break more easily. That's because living bones change over the life span -- in ways most people rarely stop to consider.

Ann Williams, physical therapy professor and chair at The University of Montana, explains it this way: As living tissue, bone constantly remodels itself -- building and breaking down. The trouble is, once a person hits 30 years of age, the breaking down or resorption process gets ahead of the building or formation process.

For women, she says, this process speeds up dramatically at menopause because of hormonal changes, making women especially vulnerable to osteoporosis -- a painful and sometimes debilitating disease that makes bones more brittle, porous and fragile.

Because bone density begins its decline at age 30, Williams says the first weapon of defense is to get that density as high as possible at its peak time and then try to keep it high. How? Get plenty of calcium, an important component of strong bones. Don't drink a lot of

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caffeinated, carbonated and alcoholic beverages because they interfere with the body's calcium uptake. And, for women, don't diet or exercise to the point where percentage of body fat falls low enough to stop menstruation. Amenorrhea signals a drop in estrogen levels, and estrogen protects against bone loss.

While pushing exercise to the point of amenorrhea is bad for bones, Williams says, exercise is just as important as diet in preserving bone health. Bone gets stronger in response to the stress of muscles pulling and pushing against it, she says.

The bones getting the most stress become the strongest, says UM physical therapy Associate Professor Beth Ikeda. Bone density in a tennis player's dominant arm may be two to three times that of the other arm, for example. As people age, the bones most at risk for breaking are the hip, back and wrist bones, she says. Exercise that focuses force or stress in those areas is important in preventing fractures.

For the hips, she says, walking is hard to beat because each step exerts a force four to seven times the body's weight on the hip joint. Walking also strengthens the bones in the lower back. Walking with a backpack, with weights or with sacks of groceries further strengthens that area and the upper back. For the wrists, Ikeda suggests kneading bread, mixing cakes and cookies by hand, and using a cast-iron skillet.

Beyond such everyday activities, Ikeda suggests some simple exercises to improve posture, strengthen trunk muscles and bones, or build bone density and muscle strength in the upper body. She recommends exercising the muscles to fatigue. Because individuals vary in strength, however, the number of repetitions and sets of repetitions will vary from person to person. If many repetitions still don't fatigue the muscles, Ikeda recommends adding weights

for certain exercises. Hold positions for about six seconds, she says.

■ Posture exercises. Standing about 2 feet from a wall with feet together and legs straight, bend forward from the hips and place palms of hands as high as possible on the wall. Variation: Do the same exercise while sitting on a folding chair. For another posture exercise, sit on a folding chair with feet flat on the floor, lean back against the chair and clasp your hands behind your head.

■ Trunk exercises. Lying face down on the floor with arms at sides, raise your upper body, stretching arms up and back. Do the same exercise with arms extended sideways from the shoulders or in front. Still lying flat with arms at sides, raise the left leg as high as possible, keeping the knee straight. Repeat with the right leg.

■ Upper body exercises. The most common exercise is the standard push-up, either a full-body push-up from the toes or a half-body push-up from the knees. For a variation, get on your hands and knees, with your arms straight and your back parallel to the floor. Bring your body to an inverted V position with buttocks high and knees, arms and back straight. Rise on your toes, then lower heels to the floor.

Always remember to keep the forces in balance, Ikeda says. That is, apply enough force to increase bone density but not enough to break the bone. If you have osteoporosis or have broken a bone, see a professional for an individualized program.

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